

Landsat 7 Processing System (LPS) Installation Procedure

Revision 1

July 21, 1997

**Goddard Space Flight Center
Greenbelt, Maryland**

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List of TBDs, TBRs, and TBSs

Reference	Description	Page
Section 1.4.10 (TBD)	LPS Software Configuration Guide Doc. No.	1-5
Section 1.4.11 (TBD)	LPS Programmers Reference Manual Doc. No.	1-5
Section 1.5.10 (TBS)	HPDI/VSIO Card User Manual Info.	1-6

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Preface

This document contains the installation and checkout procedures for the Landsat 7 Processing System (LPS) located at the Earth Resources Observation System (EROS) Data Center (EDC). It is controlled by the LPS Project Configuration Management Board (PCMB) and may be updated by document change notice (DCN) or revision. Direct comments and questions regarding this document to

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Section 1—Introduction

1.1 Purpose and Scope of Document

This document contains the installation and checkout procedures for the Landsat 7 Processing System (LPS) located at the Earth Resources Observation System (EROS) Data Center (EDC). Included in this document are the EDC site preparation information for the LPS facility, the LPS installation instructions and equipment checkout procedures. This document also describes the turnover of the LPS to the EDC after completion of the installation.

1.2 Landsat 7 Processing System Description

The LPS architecture is described in Landsat 7 Processing System Design Specification (Applicable Document 1.4.4). Information regarding external interfaces between the LPS and other systems is contained in the various interface control documents (ICDs) listed in Section 1.4. Landsat 7 Processing System Operations and Maintenance Manual (Applicable Document 1.4.8) provides additional information on the LPS.

1.3 Installation Approach

Following completion of the LPS factory acceptance test (FAT) at Goddard Space Flight Center (GSFC), the LPS equipment will be shipped to the EDC. The LPS will then be physically located at the LPS-designated site noted in EDC Site Preparation Plan for the Installation of the Landsat 7 LGS, LPS, and IAS (Applicable Document 1.4.1). It is expected that the LPS-designated site is designed and prepared in accordance with the specifications contained in EDC Site Preparation Plan for the Installation of the Landsat 7 LGS, LPS, and IAS (Applicable Document 1.4.1). Section 2 provides LPS facility preparation related information for reference and verification during the LPS installation. After the system is connected to the power, signal, and network cables (as described in Section 3), checkout will be performed (as described in Section 4). On completion of the checkout and subsequent site acceptance test (SAT), the LPS equipment will be formally turned over to the EDC (Section 5).

The final testing of LPS interfaces to the EDC Distributed Active Archive Center (DAAC) system and the Landsat 7 Ground Station (LGS) will be performed during the SAT (the SAT schedule is provided in the LPS Transition Plan (Section 1.4.2)). This document contains test procedures that verify the functionality of the LPS interfaces prior to connection to the external interfaces.

1.3.1 Shipment and Installation Schedule

The LPS will be shipped to the EDC following completion of the FAT at GSFC. The baseline schedules for the LPS FAT, shipment, and installation are noted in LPS Transition Plan (Applicable Document 1.4.2).

1.3.2 Prerequisite for LPS Installation

Two prerequisites are required to begin the installation of the LPS at the EDC:

1. Completion of LPS FAT at GSFC
2. Site readiness at the EDC.

EDC is responsible for reviewing the status of these prerequisites at the consent to ship review after culminating the FAT.

1.3.3 Installation Responsibilities

The LPS Project is responsible for the installation of LPS equipment at the EDC. The LPS to EDC network(s) connection responsibilities are designated as follows:

- The LPS Project will provide two 125-foot fiber-optic cables that connect the LPS fiber distributed data interface (FDDI) network to the EBnet.
- The EBnet project is responsible for providing the FDDI concentrator (Applicable Document 1.4.7).
- The EDC is responsible for preparing the onsite network interconnections to the LPS 10Base-T Hub.

The EDC will provide the following information, which is needed to facilitate the LPS connections to the EDC Ethernet and the FDDI local area network (LAN):

- Cable connection from the EDC Ethernet LAN to the LPS 10Base-T Hub
- Ethernet IP addresses for
 - LPS strings 1 through 5
 - LPS Indy workstations 1 through 3
 - LPS X-Terminals 1 and 2
 - LPS Laserjet5 printers 1 and 2

Table 1-1 lists the LPS Project and the EDC responsibilities for performing and/or supporting LPS facility preparation, installation, checkout and turnover.

Table 1-1. LPS Installation Responsibilities Matrix

Installation Activity (An x indicates performing Responsibility)	LPS Project	EDC O&M	EBnet Project
A. LPS and Facility Preparation			
1. Provide two 125-foot LPS FDDI-EBnet fiber-optic cables	x		
2. Provide FDDI Router			x
3. Prepare ethernet network connections for LPS 10Base-T Hub		x	
4. Identify ethernet cable connections to LPS 10Base-T Hub		x	
5. Provide FDDI IP addresses on EBnet for LPS strings 1- 5			x
6. Provide Ethernet IP addresses for LPS strings 1- 5		x	
7. Provide Ethernet IP addresses for LPS Indy Workstations 1 -3		x	
8. Provide Ethernet IP addresses for LPS X-terminals 1 -2 and HP Laserjet5 printers 1 -2		x	
9. Assign LPS site installation representative		x	
B. LPS Installation			
1. Complete FAT at GSFC		see Trans. Plan	
2. Ship LPS	x		
3. Identify EDC floor for LPS installation		x	
4. Unpack LPS	x	support	

Table 1-1. LPS Installation Responsibilities Matrix (Contd.)

Installation Activity	LPS Project	EDC O&M	EBnet Project
5. Identify LPS Junction boxes and circuit breakers		x	
6. Provide floor cut-out panels		x	
7. Install LPS, including LPS cables	x		
8. Label LPS cables	x		
C. LPS Checkout			
1. Provide LPS Login name and password	x	receive	
2. Checkout LPS Challenge XL, RAIDs, FDDI, Ethernet LAN and workstation installation	x		
3. Demonstrate LPS	x		
4. Log installation & demonstration problems	x	review	
5. Checkout cable connections and interface to the LGS, if available	x	support	
6. Checkout cable connections and interface to the EDC DAAC, if available	x	support	
D. LPS Turnover			
1. Turn over LPS COTS hardware and software	x	review	
2. Turn over LPS COTS hardware and software configuration records	x	review	
3. Turn over LPS software backup tapes and LPS documentation	x	receive	
4. Turn over LPS COTS hardware and software vendor manuals	x	receive	
5. Perform LPS site acceptance test (SAT)	support	x	

1.4 Applicable Documents

- 1.EROS Data Center, EDC Site Preparation Plan for the Installation of the Landsat 7 LGS, LPS, and IAS, May, 1997
- 2.NASA/GSFC, 514-2TP/0195, LPS Transition Plan, October 7, 1996
- 3.—, 514-4BIP/0195, LPS Build Implementation Plan, September 1996
- 4.—, 4560-8SDS/0194, Landsat 7 Processing System (LPS) System Design Specifications, May 26, 1995

- 5.—, 560-1ICD/0794, Interface Control Document Between the Landsat Ground Station and the Landsat Processing System, Revision 1, September 17, 1996
- 6.—, 209-CD-013-004, Interface Control Document Between EOSDIS Core System (ECS) and the Landsat 7 System, August 1996
- 7.—, 540-097, Interface Control Document Between the EBnet and the Landsat 7 Processing System (LPS), July 1996
- 8.—, 514-30MM/0196, Landsat 7 Processing System (LPS) Operations and Maintenance Manual, July 1997
- 9.—, 514-3SUG/01, Landsat 7 Processing System User's Guide, March 1997
10. —, (TBD), Landsat 7 Processing System (LPS) Software Configuration Guide, July 1997
11. —, (TBD), Landsat 7 Processing System (LPS) Programmers Reference Manual, July 1997

1.5 Vendor Documents

- 1.Silicon Graphics, Inc., 108-7040-020, Challenge/Onyx Site Preparation Guide, 1993
- 2.—, 007-1735-040, Power ChallengeTM and Challenge XL Rackmount Owner's Guide, February 1996
- 3.—, 007-9804-050, IndyTM Workstation Owner's Guide, February 1996
- 4.IRIS Insight Library, "Decksides Power Challenge and Challenge L Owner's Guide" (This online documentation is available on the SGI Challenge L system drive.)
- 5.Ciprico, Inc., Publication No. 21020270A, AD6700 Integrated Disk Array Quick Installation Guide, August 1993
- 6.—, Publication No. 21020650A, Addendum to the Disk Array Guide, March 1994
- 7.—, Publication No. 21020295H, Product Note for 6700/10 Disk Arrays and Controller Boards, April 1995
- 8.Silicon Graphics, Inc., 007-2266-001, Digital Linear Tape Drive Owner's Guide, 1994

9. Network Computing Devices, Inc., Part No. 9300326, Installing Your HMX Family System, Revision A, February 1995
10. General Standard Corporation, High Speed Parallel Digital Interface (HPDI)/Very High Speed Serial Interface (VSIO) Card User's Manual, (TBS)
11. Network Computing Devices, Inc., Part No. 9300289, About Your 21-Inch Color Monitor NC2185AA, Revision A, April 1994
12. Epson America, Inc., X-LQ570PLUS, Epson LQ-570+ (Label) Printer User's Guide
13. Hewlett-Packard, Publication No. C3916-90901, LaserJet5 and 5M Printer User's Manual
14. Silicon Graphics, Inc., 007-2872-001, IRISconsole Administrator's Guide
15. Box Hill Systems Corporation, Note-94-006, Using the Box Hill MDL1C-7 Media Changer

Section 2—LPS Facility Preparation Information

This section provides information on floor space, floor loading, power and grounding, and heat dissipation for the LPS to be installed at the EDC site. Detailed requirements and design specifications for preparing the LPS installation site are provided in EDC Site Preparation Plan for the Installation of the Landsat 7 LGS, LPS, and IAS (Applicable Document 1.4.1).

A detailed list, including item quantities, of the LPS equipment to be installed at the EDC is provided in Table 5-1.

2.1 Floor Space

The EDC site floorplan and computer room layout for the LPS are shown in EDC Site Preparation Plan for the Installation of the Landsat 7 LGS, LPS, and IAS (Applicable Document 1.4.1).

Silicon Graphics, Inc. (SGI) specifies a minimum ceiling height of 96 inches to allow for Challenge XL cabinet airflow clearance. Also, the Challenge XL cabinet requires 36-inch wide clearances in the front and back of the cabinets to allow the doors to fully open. For activities that use side access, adequate space is required to roll the cabinet forward or backward to provide side clearance.

2.2 Floor Loading

For installations on raised floors, minimum floor loading is 133 pounds per square foot to support the SGI Challenge XL. The SGI Challenge XL cabinets use four casters and four stabilizing levelers for weight distribution. If the floor is modified (for example, by adding cutouts for cable access), the EDC should determine and provide the additional reinforcement, as required.

2.3 Power and Grounding

Table 2-1 summarizes the alternating current (ac) power information for the LPS equipment.

Table 2-1. ac Power Information for LPS Equipment

Equipment	Power VAC (min/nom/max)	Hertz (min/max)	Phase	Amps	Connector Type
Challenge XL	187/208/264	50/60	1	24	NEMA L6-30R) twist-lock type, 2-P, 3-W, 30A, 250V)
RAID/DLT cabinet	100/120	50/60	1	14	NEMA 5-15P (100/120V @ 15 Amps)
Indy workstation					NEMA 5-15P
- System chassis	100/132	47/63	1	4.2	
- Monitor	100/132	47/63	1	2.7	
NCD X-Terminal					NEMA 5-15P
- Terminal base	90/264 (use 110 nominal)	47/63	1	0.2	
- Monitor	90/264 (use 110 nominal)	50/60	1	1.3	
Hewlett-Packard LaserJet5 printer	100/127(+/-10%)	50/60	1	11.2	NEMA 5-15P
Epson LQ 570+ printer	120	50/60	1	2	NEMA 5-15P
IRISconsole	110	50/60	1	1	NEMA 5-15P
Ethernet 10Base-T SuperHub	110	50/60	1	0.5	NEMA 5-15P

The LPS equipment/racks should be grounded as specified in EDC Site Preparation Plan for the Installation of the Landsat 7 LGS, LPS, and IAS (Applicable Document 1.4.1). There are no special grounding requirements for the LPS equipment.

2.4 Heat Dissipation

The heat dissipation information on LPS equipment is as follows:

Equipment	No. of Units	ac Load (ton) (each unit/system)	Btu/Hour (each unit/system)
Challenge XL	5	1.33	16,000
Indy	3	0.075	900
BOX HILL MDL1C-7- DLT MEDIA CHANGER	5	0.028	340
RAID	10	0.085	1,020
X-Terminal	2	0.048	570
Printers	2	0.090	1080

LPS Totals (All Units)		8.141	97900
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NOTE: The Challenge cabinet airflow is drawn in through the bottom and blown out through the top. The RAID/DLT cabinet pulls in air from the front and exhausts out the back. The Challenge cabinets and RAID/DLT cabinets will be position above vented floor tiles.

Section 3—System Installation

3.1 Introduction

This section provides information for installing the LPS equipment. Once the LPS site at the EDC has been prepared in accordance with EDC Site Preparation Plan for the Installation of the Landsat 7 LGS, LPS, and IAS (Applicable Document 1.4.1) and verified by the EDC at the Consent to Ship Review (see Applicable Document 1.4.2), the LPS equipment can be shipped from GSFC and installed at the EDC. This section provides information on unpacking and inspection, layout, ac power connections, cabling, and software installation for the LPS at the EDC site.

The information provided in this section refers to the installation of the entire LPS. SGI is contracted to setup and turn-on the Challenge XLs, Indy workstations and the IRISconsole. LPS personnel will install and setup the LPS components not covered under the SGI contract.

3.2 Unpacking and Inspection

LPS personnel will be responsible for unpacking and inspecting LPS equipment at the EDC loading/receiving area. Check packing containers for external damage before removing the contents. Use care in handling and removing the components and the packing material.

3.3 Equipment Layout

The EDC computer room layout and the position of LPS equipment layout are shown in EDC Site Preparation Plan for the Installation of the Landsat 7 LGS, LPS, and IAS (Applicable Document 1.4.1). With assistance from the EDC facility coordinator, install LPS equipment on the LPS floor.

3.4 ac Power Connection

The LPS site power and connector information is provided in Section 2.3. Connect the LPS equipment to the designated junction boxes at the EDC. Make sure that all power switches of all LPS equipment are in the OFF position during the power connection. Also, identify and locate the circuit breakers associated with all LPS designated junction boxes before starting LPS equipment installation.

The Challenge XL ac power connector is located at the bottom of the rear of each XL cabinet (Figure 3-1). The rear door does not have to be opened to access this connector.

The RAID/DLT cabinet ac power strip connector is located at the rear of each cabinet. Open the cabinet rear door to gain access to the connector.

The Indy, X-Terminal, printer, and IRISconsole ac power connections are accessible on each chassis. Refer to vendor documentation (Section 1.5) for these components.

3.5 Cabling

The cable listing and cable interconnections diagram of LPS are shown in Appendix B of LPS Operations and Maintenance Manual (Applicable Document 1.4.8).

LPS personnel will install cables between LPS subsystems and/or equipment as shown in the LPS interconnection diagram. The cables are individually designated by a cable number. The cable ends are labeled for the connection equipment (or location). The LPS cable labeling scheme is also defined in LPS Operations and Maintenance Manual (Applicable Document 1.4.8).

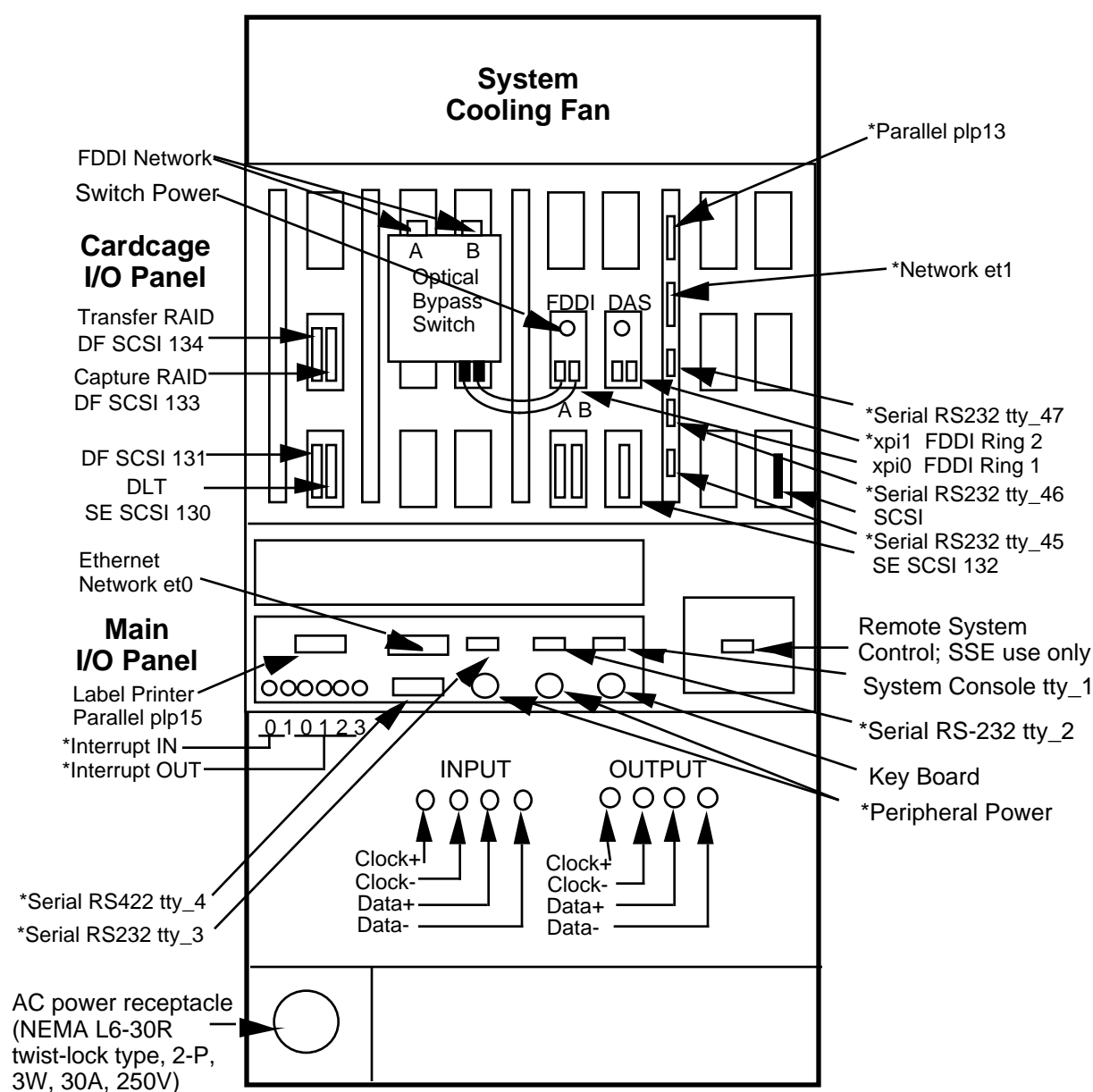
Place LPS cables under the floor panels using aisles or walkways for the cable routes. Sufficient cable length has been provided. Bundle the cables within the cabinets in a convenient manner using cable ties. Allow sufficient service loops. Ensure that the labels are clearly visible.

The Challenge XL input/output cable connections are located on the connector panels at the rear of the cabinet (Figure 3-1). Open the rear doors to gain access to these connectors.

The RAID/DLT cabinet cable connections are located on the rear of each component within the cabinet (Figure 3-2). Open the cabinet rear door to gain access to these connectors.

The Indy Workstation cable connections are located on the rear of unit (Figure 3-3). Refer to vendor documentation (Section 1.5) for more details.

The X-Terminal, printer and IRISconsole connectors are accessible on each chassis. Refer to vendor documentation (Section 1.5) for these components.



* indicates not used in operational configuration

Figure 3-1. Challenge XL - Rear View, Doors Open

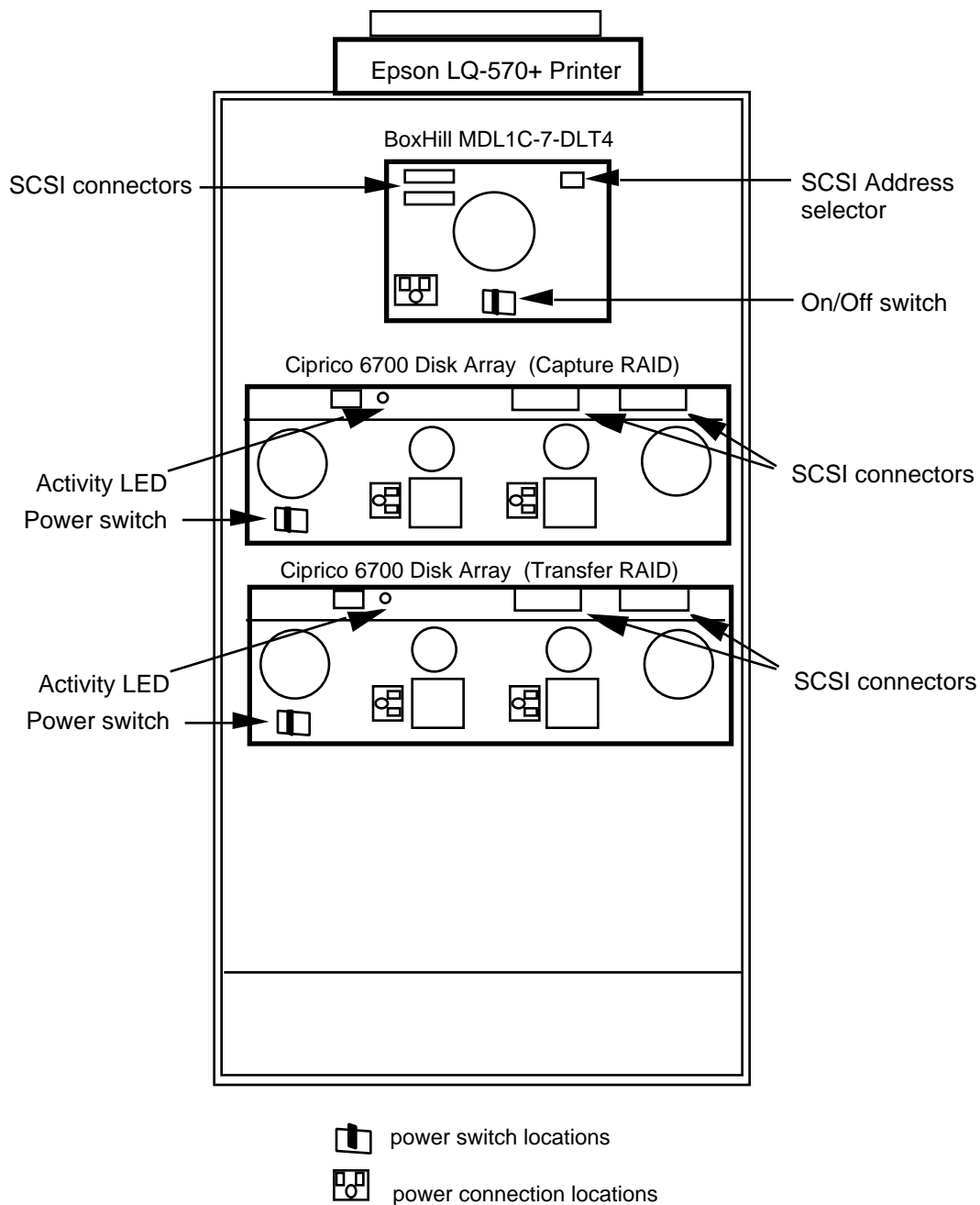


Figure 3-2. RAID/DLT/Label Printer Cabinet – Rear View

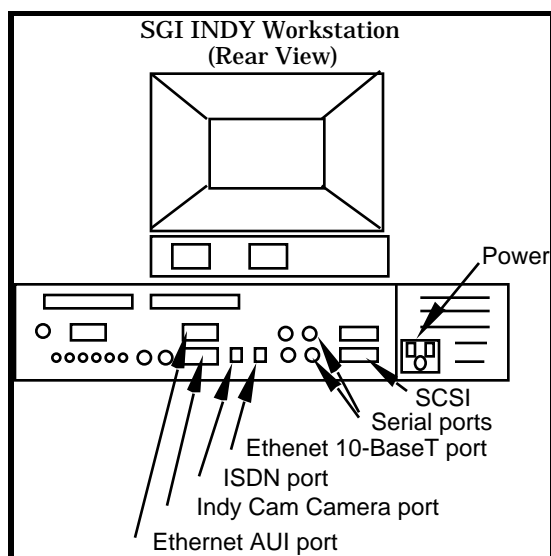


Figure 3-3. SGI Indy Workstation – Rear View

3.6 Software Installation

The LPS operational software is installed on each Challenge XL system drive prior to shipment to the EDC. Therefore, LPS software installation is not required at the EDC site. The LPS personnel will be able to reinstall LPS software on a Challenge XL, if for some reason the software is found to be corrupted during LPS installation.

Section 4—System Checkout

4.1 Introduction

This section describes the checkout of the hardware installation for the LPS. Sections 4.3 through 4.13 constitute a complete checkout procedure. A checklist is provided in Appendix A for the checkout procedure.

Under the existing maintenance contract, SGI will verify the integrity of the Challenge XLs, Indy workstations, and the IRISconsole (Sections 4.4 and 4.5). Checkout procedures are provided to verify the installation. LPS personnel will perform the checkout of the entire LPS. (NOTE: The login name and password of each system are obtained from the EDC LPS site installation representative.)

Included in the checkout procedure are references to the equipment setup procedures in LPS Operations and Maintenance Manual (Applicable Document 1.4.8). This procedure shall be exercised for the Indy workstations and the X Terminals after relocation to the EDC.

Following completion of system checkout, the LPS is available for site acceptance testing.

4.2 Problem Tracking and Correction

The LPS Interactive Configuration Change Request (CCR) Automation System (ICAS) procedures, remotely accessible by LPS personnel at the EDC, will be used to document and track hardware and software problems.

4.3 LPS Startup

Apply power to the following LPS equipment:

- Five SGI Challenge XL cabinets—Turn on power at the switch located behind the lower front door (Figure 4-1). Verify that both power supplies have green light emitting diodes (LEDs) lit. Insert the key into the lock on the front panel and turn clockwise to

12:00 (ON) position. Verify that the fans start and the front display becomes active. The system will boot automatically.

- The XL green power-on LED, located above the function buttons, lights up to indicate that power has been applied to the system midplane. The amber fault LED then lights up to indicate that power has been applied to the system controller. The fault LED goes out when the system controller has successfully initialized and the POSTs are completed.

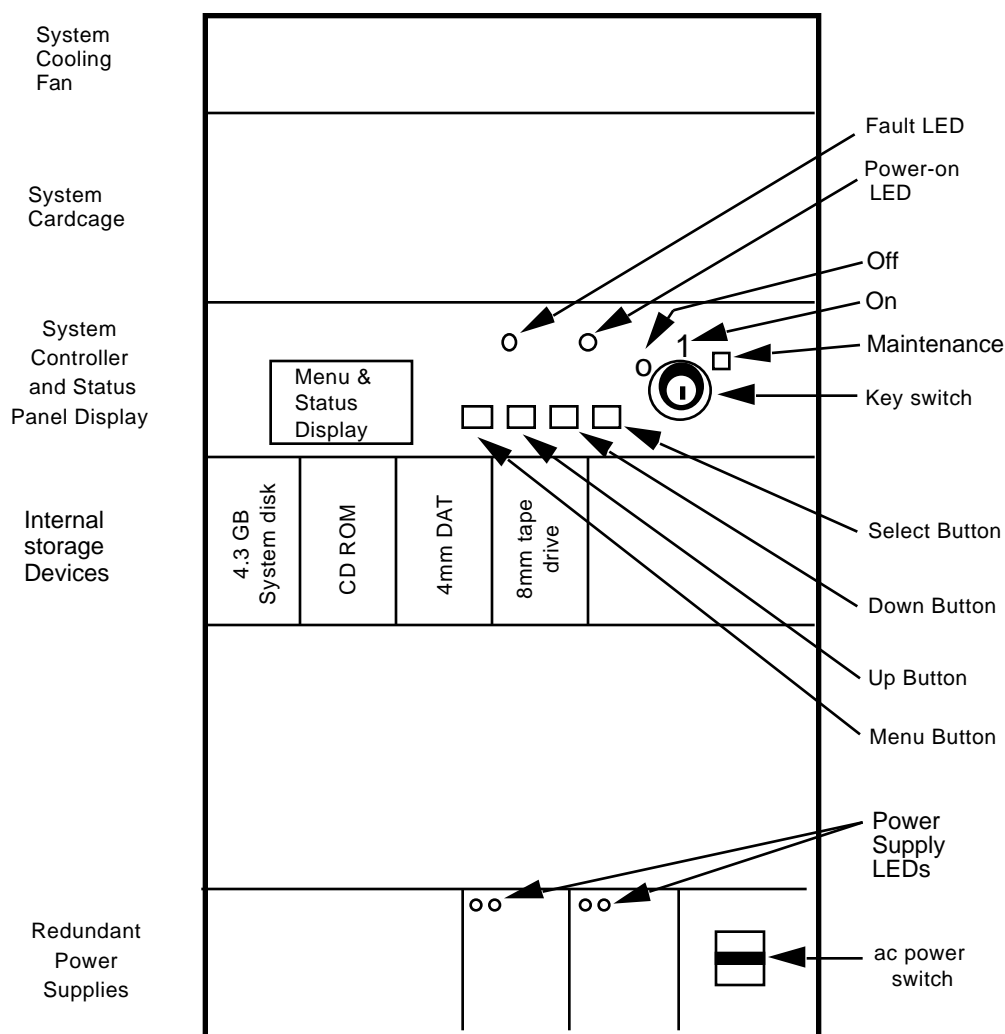


Figure 4-1. Challenge XL – Front View, Doors Open

- Two NCD X-Terminals—Refer to manufacturer's documentation. The monitor power switch is located on the back of the monitor. Verify that the power indicator is green. The power switch for the terminal base unit is located on the rear of the unit. Verify that the power LED is illuminated.
- One SGI IRISconsole—Refer to manufacturer's documentation. Connect the power supply connector to the back of the IRISconsole.
- Three SGI Indy workstations—Refer to manufacturer's documentation. Turn on the monitor power switch on the front of the monitor. Verify that the power indicator is illuminated. On the system chassis, press and release the power switch on the front panel. The power indicator is amber for a few seconds as the system runs the power on diagnostics. The LED turns green as the system boots.
- Five RAID/DLT/label printer cabinets (Figures 3-2 and 4-2)—Refer to manufacturer's documentation (Section 1.5). The power switches of the Box Hill MDL1C-7-DLT4 Media Changer and RAIDs are located on the rear of the unit.

When the Box Hill MDL1C-7-DLT4 Media Changers are powered on, each unit goes through its power-on self test (POST). All of the LEDs on the front of the drive enclosure turn on sequentially from top to bottom as the POST begins. All four LEDs stay on solidly as the POST runs. All LEDs except the yellow tape-in-use LED go dark as the POST finishes. Apply power to the Box Hill MDL1C-7-DLT4 Media Changers and verify the POST.

At RAID power up, each RAID performs a built-in self test (BIST). This process takes approximately 10 seconds. At the conclusion of the process, the display should indicate "On Line Status: OK." Apply power to the RAIDs and verify the BIST.

- Epson LQ-570+ (Label) printers—Refer to manufacturer's documentation. Press and release the power switches on the front of the Epson LQ-570+ label printers and verify that the power indicator of each printer is lit.
- Two Hewlett-Packard (HP) LaserJet5 printers—Refer to manufacturer's documentation. Turn on the power switch on the

front of each unit to “I” position. Verify that after the printer warms up, the display reads “READY.”

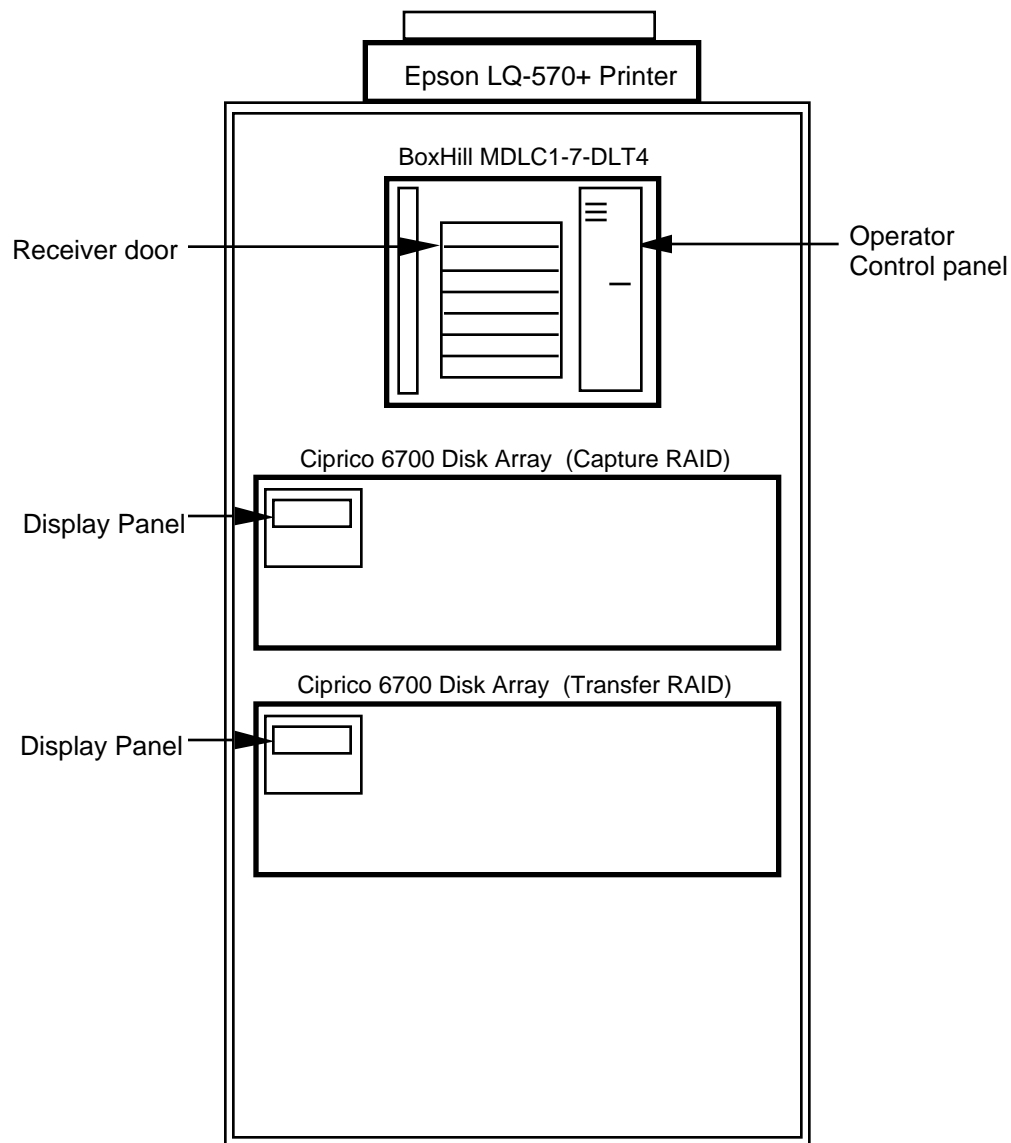


Figure 4-2. RAID/DLT Cabinet – Front View

4.4 Indy Workstation Checkout

After the power up of each Indy workstation, a login window appears. At the prompt, enter the name and password on each Indy. This login sequence verifies that the Indy system is operational. The following subsections discuss testing the communication links to the Challenge XLs.

Perform the Indy setup procedure described in the Indy Workstation Owner's Guide (Applicable Document 1.4.3).

4.5 SGI Challenge XL and IRISconsole Checkout

At Indy 3, establish a console window for each LPS string by using the following steps from the IRISconsole utility:

1. Open the Icon Catalog icon from the Overview window.
2. Select the application from the Catalog window.
3. Select the IRISconsole icon on the Icon Catalog Application window.
4. Select an icon that represents string 1 on the IRISconsole window.
5. Select the "Get Console" button on the IRISconsole site window.
6. Enter the system console login ID and password.
7. Apply the selections.

After startup and selection are finished, the prompt "lps001 (or 002 through 005) login:" will appear on the Indy3 window. Type in the login and password. At the message "TERM=(vt100)" press <ENTER>. This verifies that the serial links to the Indy workstation are operational.

From Indy3, perform a system disk directory on Challenge XL 1. The command "ls -la"<ENTER> will display a long list of directory files.

Insert a blank 4mm cassette into the Challenge XL 1 digital audio tape (DAT) drive. From Indy3, copy a file from the system disk to tape using the command "tar -cvf /dev/tape <filename>." To display a list of files on the tape, type "tar -tvf /dev/tape".

Insert a blank 8mm cassette in Challenge XL 1 8mm drive. From Indy3, copy a file from the system disk to tape using the command “tar -cvf /dev/rmt6 <filename>”. To display a list of files on the tape, type “tar -tvf /dev/rmt6”.

Insert a compact disk—read-only memory (CD-ROM) in the Challenge XL 1 (or 2 through 5) drive. At Indy3, perform a directory using the command “ls/CDROM”.

Repeat the above procedure for Challenge XLs 2 through 5.

The basic functionality of the IRISconsole and Challenge XL and its storage devices has been verified.

4.6 X-Terminal Checkout

Perform the X-Terminal setup procedure described in LPS Operations and Maintenance Manual (Applicable Document 1.4.8). At the power-up, the X-Terminal will automatically establish the communication with the Ethernet LAN and will start to boot from the Indy workstation. This verifies the local X-Terminal system operation.

4.7 Ethernet LAN Checkout

At Indy1, ping (a UNIX command) all five XLs. At Indy2, ping XL 1. At Indy3, ping XL 1. The network links between the Challenge XLs and the Indys have been verified.

From the two X-Terminals, ping to any XLs. This verifies the Ethernet link to the X-Terminals.

This verifies the Ethernet connections.

4.8 Box Hill MDL1C-7-DLT4 Media Changer Checkout

Load a blank cassette in the Box Hill MDL1C-7-DLT Media Changer on string 1. Refer to the Using the Box Hill MDL1C-7-DLT Media Changer (Vendor Document 1.4.15). The Box Hill MDL1C-7-DLT media changer is connected to the Challenge XL small computer serial interface (SCSI) controller unit 5. Refer to the Appendix I-SCSI IDs List of the LPS Operations and Maintenance Manual (Applicable Document 1.4.8)

for the correct the Box Hill MDL1C-7-DLT Media Changer unit number.

At Indy3, copy a file from Challenge XL 1 system disk to Box Hill media changer using the command "tar -cvf /dev/rmt4 <filename>". Display a list of the files on Box Hill media changer with the command "tar -tvf /dev/rmt4".

Repeat this procedure for each Box Hill media changer on strings 2 through 5.

4.9 Ciprico Disk Array (RAID) Checkout

The string 1 RAID's checkout can be performed using the following steps:

1. Check the display on the front of each RAID to verify "On Line Status: OK".
2. At the Indy3 console, use the "hinv" (hardware inventory) command to verify that both RAID's are active
3. Use the "df -k" command to display file system from each RAID. This verifies that the RAID is mounted.
4. Use the UNIX command "cp" to copy a test file from the XL system disk to each RAID and verify that the test file is transferred.

Repeat this procedure for both RAID's on strings 2 through 5.

4.10 EDC DAAC Interface (FDDI LAN) Checkout

The FDDI LAN checkout can be performed by using the FDDI network verification software tool which resides on each challenge XL. The checkout can be done by using the following steps:

1. From any Unix workstations or X Terminals on the LAN, telnet and Login to any five Challenge XLs.
2. Select the "winterm" icon.
3. At the Unix prompt type in the "fddivis" command then press return key (the fddivis command is a FDDI network support tool

which automatically provides user a virtual image of all nodes and rings on the FDDI network).

4. Verify that all of the Challenge XLs are connected to the FDDI network.

Optional: If the EDC DAAC is available, transmit a test file from LPS string 1 to the EDC DAAC . Verify the EDC DAAC directory for receipt of the files.

4.11 HP LaserJet5 Printer Checkout

After power up, the test printout will appear. At each Indy workstation, print test file to HP LaserJet5 printers 1 and 2 (named hp1 and hp2). Use the command "lp -dhp1 <filename>" or "lp -dhp2 <filename>" to print a file.

4.12 Epson LQ-570+ (Label) Printer Checkout

After power up, the test printout will appear. At XL 1, print test file to string 1 label printer. Use the command "lp -dep <filename>" to print a file. Repeat for strings 2 through 5.

4.13 LGS Signal Interface Checkout

If the LGS matrix switch is operational, LGS signal interface checkout can be performed using the following steps:

1. Configure the LGS matrix switch (requires LGS operator support) such that string 1 is connected to string 2 for clock and data transmission, and string 2 is connected to string 1 for clock and data transmission.
2. Initiate the record function on string 2.
3. Initiate the playback function on string 1.
4. Observe that data is filling up the RAID array on receiving string.
5. Repeat steps 2 through 4 with the record function on string 1 and the playback function on string 2.

Repeat steps 1 through 5 for strings 1 and 3.

Repeat steps 1 through 5 for strings 1 and 4.

Repeat steps 1 through 5 for strings 1 and 5.

If the LGS matrix switch is not operational, LGS signal interface checkout can be performed by interconnecting the coax signal cables at the matrix switch ends. Use BNC barrel connectors to connect string 1 to string 2 for clock and data transmission and string 2 to string 1 for clock and data transmission (bypass the matrix switch). Use steps 2 through 5 to verify the LGS signal interface between strings 1 and 2.

Repeat steps 1 through 5, using the BNC barrel connector, for strings 1 and 3.

Repeat steps 1 through 5, using the BNC barrel connector, for strings 1 and 4.

Repeat steps 1 through 5, using the BNC barrel connector, for strings 1 and 5.

4.14 LPS Shutdown

Checkout of the LPS and its interfaces is completed. The LPS equipment can remain powered up. To shut down the LPS, perform the following procedure:

1. Five Challenge XL cabinets—At each Indy workstation, log out from all five Challenge XLs. Using the IRISconsole bring up a console window for the desired Challenge XL, log in as root, type "shutdown" and wait for "System Maintenance Menu" to appear then turn the Challenge XL key switch to OFF position..
2. Five Epson LQ-570+ (Label) printers—Turn off the power switch on the front of each unit to be powered down.
3. Two HP LaserJet5 printers—Turn off the power switch on the front of each unit to be powered down.
4. Five RAID/DLT/label printer cabinets—Turn off each RAID and Box Hill Media Changer within the cabinet. The power switches of the Box Hill Media Changers and RAIDs are located on the rear of each unit.

5. Two NCD X-Terminals—Logout and turn off the monitor power switch located on the back of the monitor. Turn off the power switch for the terminal base unit located on the rear of the unit.
6. Three SGI Indy workstations—Turn off the power switch on the front of the monitor. Turn off the system chassis on the front panel.
7. Five Challenge XL cabinets—Turn the Challenge XL power switch off.

This completes the power-down sequence.

Section 5—System Turnover to the EDC

This section describes the procedure to turn the LPS equipment over to the EDC.

5.1 LPS Configuration

The LPS is composed of five strings and peripherals. Sections 5.2 and 5.3 list the hardware and software components that are to be turned over to the EDC.

5.2 Major Hardware Components

Table 5-1 lists the LPS hardware components. Refer to LPS Operation and Maintenance Manual (Applicable Document 1.4.8) for a more detailed listing of the LPS hardware components.

Table 5-1. LPS Hardware Components

System Name	Qty
Challenge XL System	
Challenge XL Rackmount	5
128MB RAM Board	20
CPU Board	10
IO4 Board w/o mezzanine	10
SCSI Mezzanine Board	5
4.3 GB System Disk	6
Compact Disk (CD-ROM)	5
4mm Digital Audio Tape (DAT) Drive	5
8mm Tape Drive	5
FDDI	5
Optical Bypass Switch	5
HPDI/VSIO Board	5
IRISconsole	1
Indy Workstation (System & Monitor)	3
Box Hill MDL1C-7-DLT4 Media Changer	5
Paralan SCSI SE/DF Converter	5
6700 Disk Arrays, Model AR 6702	10
Epson LQ-570PLUS printer	5
HP LaserJet 5 printer	2
X-Terminal	
21 Inch Color Monitor NC2185AA	2
HMX System	2
Ethernet 10 Base-T SuperHub, Model 4422	1

5.3 Software Items

All LPS software is preinstalled on each LPS string. The backup tapes, consisting of Box Hill Media Changer cartridges, for all strings (1 through 5) will be delivered to the EDC personnel.

5.4 Documents and Manuals

The following documents are included in the LPS turnover to the EDC:

- 1.LPS Installation Procedure
- 2.LPS Users Guide
- 3.LPS Operations and Maintenance Manual
- 4.LPS Programmers Reference Manual
- 5.LPS Software Configuration Guide
- 6.About Your 21-Inch Color Monitor NC2185AA
- 7.AD6700 Integrated Disk Array Quick Installation Guide
- 8.Addendum to the Disk Array Guide
- 9.Challenge/Onyx Site Preparation Guide
10. Digital Linear Tape Drive Owner's Guide
11. LaserJet5 Printer User's Manual
12. IndyTM Workstation Owner's Guide
13. Installing Your HMX Family System
14. High Speed Parallel Digital Interface (HPDI) / Very High Speed Serial Interface (VSIO) Card User's Manual
15. Power ChallengeTM and Challenge XL Rackmount Owner's Guide
16. Product Note for 6700/10 Disk Arrays and Controller Boards
17. Epson LQ-570+ (Label) Printer User's Guide
18. IRISconsoleTM Administrator's Guide

19. Software Installation Administrator's Guide (includes Installation Instructions CD)
20. ONC3/NFSTM Administrator's Guide
21. Diskless Workstation Administration Guide
22. Network License SystemTM Administration Guide
23. Selected IRIX Site Administration Reference Pages
24. NIS Administration Guide
25. IRIXTM Advance Site Server Administration Guide
26. LPS Software Requirements Specification
27. LPS Functional and Performance Specification
28. LPS As-Built Specification
29. LPS Operations Concept Document
30. LPS Output Data Format Control Book

5.5 Demonstration

After testing at the EDC is complete, the LPS shall be demonstrated. The capture of approximately 1 minute of test image data will be performed, and Level OR processing will be initiated. The image will be displayed on the moving window display.

5.6 Site Acceptance Test

The LPS equipment installation is complete after the LPS Checkout (Section 4). The EDC is responsible for conducting the LPS site acceptance test. The LPS Project will support the EDC in conducting the LGS to LPS and EDC DAAC to LPS cabling and interface tests if they could not be performed during LPS checkout (Sections 4.10 and 4.13).

The LPS equipment and software, except LPS application software, is formally turned over to the EDC after completion of the SAT. Afterwards, the LPS Project and the EDC follow LPS Transition Plan

(Application Document 1.4.2) to complete full acceptance of the LPS by the EDC.

Appendix A—Installation Checklist

Description	EDC Representative	EDC Engineer
4.3 LPS Startup		
Step 1: Challenge XL 1 through 5 power		
Step 2: X-Terminals 1 and 2 power		
Step 3: Indy workstations 1 through 3 power		
Step 4: String 1 capture and transfer RAID BIST		
Step 4: String 1 Box Hill Media Changer POST		
Step 4: String 2 Capture and Transfer RAID BIST		
Step 4: String 2 Box Hill Media Changer POST		
Step 4: String 3 Capture and Transfer RAID BIST		
Step 4: String 3 Box Hill Media Changer POST		
Step 4: String 4 capture and transfer RAID BIST		
Step 4: String 4 Box Hill Media Changer POST		
Step 4: String 5 capture and transfer RAID BIST		
Step 4: String 5 Box Hill Media Changer POST		
Step 5: HP LaserJet5 printers 1 and 2 power		
Step 6: Epson LQ-570+ printers 1 through 5 power		
4.4 Indy Workstation Checkout		
Indy workstation 1 login		
Indy workstation 2 login		
Indy workstation 3 login		
4.5 SGI Challenge XL and IRISconsole Checkout		
Indy3 serial link to XL 1		
Indy3 serial link to XL 2		
Indy3 serial link to XL 3		
Indy3 serial link to XL 4		
Indy3 serial link to XL 5		
IRISconsole		
Challenge XL 1 system disk		
Challenge XL 1 4mm tape		
Challenge XL 1 8mm tape		
Challenge XL 1 CD-ROM		
Challenge XL 2 system disk		
Challenge XL 2 4mm tape		
Challenge XL 2 8mm tape		
Challenge XL 2 CD-ROM		
Challenge XL 3 system disk		
Challenge XL 3 4mm tape		
Challenge XL 3 8mm tape		
Challenge XL 3 CD-ROM		
Challenge XL 4 system disk		
Challenge XL 4 4mm tape		
Challenge XL 4 8mm tape		
Challenge XL 4 CD-ROM		
Challenge XL 5 system disk		
Challenge XL 5 4mm tape		
Challenge XL 5 8mm tape		
Challenge XL 5 CD-ROM		

4.6 X-Terminal Checkout		
X-Terminal 1 setup		
X-Terminal 2 setup		
4.7 Ethernet LAN Checkout		
Indy1 to XL 1		
Indy1 to XL 2		
Indy1 to XL 3		
Indy1 to XL 4		
Indy1 to XL 5		
Indy2 to XL 1		
Indy3 to XL 1		
X-Terminal 1 to XL 1		
X-Terminal 2 to XL 1		
4.8 Box Hill MDL1C-7-DLT4 Media Changer Checkout		
String 1 Box Hill MDL1C-7DLT4 Media Changer		
String 2 Box Hill MDL1C-7DLT4 Media Changer		
String 3 Box Hill MDL1C-7DLT4 Media Changer		
String 4 Box Hill MDL1C-7DLT4 Media Changer		
String 5 Box Hill MDL1C-7DLT4 Media Changer		
4.9 Ciprico Disk Array (RAID) Checkout		
String 1 capture RAID and transfer RAID		
String 2 capture RAID and transfer RAID		
String 3 capture RAID and transfer RAID		
String 4 capture RAID and transfer RAID		
String 5 capture RAID and transfer RAID		
4.10 EDC DAAC Interface (FDDI LAN) Checkout		
LPS string 1 FDDI		
LPS string 2 FDDI		
LPS string 3 FDDI		
LPS string 4 FDDI		
LPS string 5 FDDI		
LPS string 1 and EDC DAAC FDDI (optional)		
4.11 HP LaserJet5 Printer Checkout		
HP LaserJet5 printer 1		
HP LaserJet5 printer 2		
4.12 Epson LQ-570+ (Label) Printer Checkout		
Epson LQ-570+ (Label) printer 1		
Epson LQ-570+ (Label) printer 2		
Epson LQ-570+ (Label) printer 3		
Epson LQ-570+ (Label) printer 4		
Epson LQ-570+ (Label) printer 5		
4.13 LGS Signal Interface Checkout		
String 1 to string 2		
String 1 from string 2		
String 1 to string 3		
String 1 from string 3		
String 1 to string 4		
String 1 from string 4		
String 1 to string 5		
String 1 from string 5		
4.14 LPS Shutdown (optional)		
Step 1: Log out at Indy1, 2, and 3		

Step 2: Epson LQ-570+ (Label) printer 1 through 5 power		
Step 3: HP LaserJet5 printer 1 and 2 power		
Step 4: RAID/DLT cabinet 1 through 5 power		
Step 5: X-Terminal 1 and 2 power		
Step 6: Indy workstation 1 through 3 power		
Step 7: XL 1 through 5 power		

Appendix B—LPS Equipment Turnover Document

The LPS Project will use GSFC Form 20-4 to turnover the control of all LPS equipment to the EDC. Following is a shipping equipment list

SHIPPING EQUIPMENTS LIST

ITEM	DESCRIPTION	QTY	UNIT	ECN NO.
1	SGI CHALLENGE XL COMPUTERS	5	EA	
	S/N: S39406 (String1)			1523925
	S/N: S46910 (String2)			1816994
	S/N: S46911 (String3)			1816993
	S/N: S46908 (String4)			1816996
	S/N: S37891 (String5)			1422266
2	EQUIPMENT RACKS	5	EA	
	(Each rack contents two (2) (String1)			N/A
	Ciprico RAIDs and one (1) (String2)			N/A
	BoxHill MDL1C-7-DLT4 (String3)			N/A
	Media Changer) (see note 1) (String4)			N/A
	(String5)			N/A
3	SGI INDY WORKSTATIONS DISPLAYS	3	EA	
	S/N: 2475339 (L7Indy #8)			1700455
	S/N: 2475336 (L7Indy #9)			1700300
	S/N: 2404317 (L7Indy #3)			1422249
4	SGI INDY WORKSTATIONS BASES	3	EA	
	S/N: 08006909EEE9 (L7Indy #8)			1700299
	S/N: 0800690A36C8 (L7Indy #9)			1700452
	S/N:080069089491 (L7Indy #3)			1422248
5	NCD X-TERMS	2	EA	
	S/N: 410199-179			1532590
	S/N: 410199-174			1532588
6	NCD X-TERMS BASES	2	EA	
	S/N: 0995T002544			1532587
	S/N: 0995T002552			1532586
7	CABLES	2	EA	N/A
8	MISC	2	EA	N/A
9	EPSON PRINTERS (LQ-570+)	5	EA	
	S/N: 1F8E567833			1817001
	S/N: 1F8E567827			1816999
	S/N: 1F8E567830			1816998
	S/N: 1F8E567826			1816997
	S/N: 1F8E441825			1816995
10	HP LASERJET PRINTERS	2	EA	
	S/N: USLB010750			1755022
	S/N: USLB010751			1755021
11	MATRIX SWITCH			
	S/N:129791	1	EA	1529369
12	DOCUMENTATION BOX	1	EA	N/A

13	ETHERNET HUB LanCast 4422 SuperHub 24 Ports S/N:6577600083	1	EA	1817005
14	IRISconsole Unit	1	EA	1750903

Note 1: List of subsystems installed on Equipment Racks

Equipment Rack	Subsystem Model and S/N	ECN No.
LPS STRING 1	Ciprico RAID Model AR6712 - S/N: 001920	1529135
	Ciprico RAID Model AR6712 - S/N: 001919	1529136
	BoxHill MDLC1-7-DLT 4 - S/N: 55787	1816987
LPS STRING 2	Ciprico RAID Model AR6712 - S/N: 002664	17700919
	Ciprico RAID Model AR6712 - S/N: 002659	17700920
	BoxHill MDLC1-7-DLT 4 - S/N: 55783	1816992
LPS STRING 3	Ciprico RAID Model AR6712 - S/N: 002660	17700924
	Ciprico RAID Model AR6712 - S/N: 002663	17700925
	BoxHill MDLC1-7-DLT 4 - S/N: 55786	1816991
LPS STRING 4	Ciprico RAID Model AR6712 - S/N: 002662	17700923
	Ciprico RAID Model AR6712 - S/N: 002661	17700922
	BoxHill MDLC1-7-DLT 4 - S/N: 55785	1816990
LPS STRING 5	Ciprico RAID Model AR6712 - S/N: 001915	1529137
	Ciprico RAID Model AR6712 - S/N: 001916	1529138
	BoxHill MDLC1-7-DLT 4 - S/N: 55782	1816988

Acronyms

ac	alternating current
BIST	built-in self test
BNC	
Btu	British thermal unit
CCR	configuration change request
CD-ROM	compact disk—read-only memory
CSR	consent to ship review
DAAC	Distributed Active Archive Center
DAT	digital audio tape
DCN	document change notice
DLT	digital linear tape
EDC	EROS Data Center
EROS	Earth Resources Observation System
FAT	factory acceptance test
FDDI	fiber distributed data interface
FTP	File Transfer Protocol
GSFC	Goddard Space Flight Center
HP	Hewlett-Packard
HPDI	high speed parallel digital interface
ICAS	Interactive CCR Automation System
ICD	interface control document
IP	Internet Protocol
LAN	local area network
LED	light emitting diode
LGS	Landsat 7 Ground Station
LP	Land Processes
LPS	Landsat 7 Processing System
POST	power-on self test
RAID	redundant array of inexpensive devices
SAT	site acceptance test
SCSI	small computer serial interface
SGI	Silicon Graphics, Inc.
VSIO	very high speed serial interface